AMENDMENTS TO THE CLAIMS

This listing of claims will replace all prior versions, and listings, of claims in the application:

LISTING OF CLAIMS:

1. (Currently Amended) A system having a data sender, a data receiver, and at least one communications device for transmitting in ~~an error-prone~~ a network, wherein the system increases the efficiency of data transmissions within the network and comprises:

- a first error control subsystem, coupled to the data sender, and comprising:

  (a) a first protocol converter that separates incoming network data traffic by quality of service requirements and that converts each of the separated datastreams into a protocol independent format based on the quality of service requirments, and

  (b) a first error control module that receives the ~~separated~~ converted datastreams, encodes the datastreams by applying forward error correction (FEC) to the datastreams based on the quality of service requirements so that data associated with a first quality of service requirement is encoded using a first type of FEC and data associated with a second quality of service requirement is encoded using a second type of FEC, ~~in order to decrease potential transmission errors,~~ and outputs the encoded datastreams to the communications device for transmission over the network; and

- a second error control subsystem, coupled to the data receiver and a second network, and comprising:

(a) a second error control module, coupled to the second network, and which receives and decodes the encoded datastreams, and

(b) a second protocol converter that reformats the decoded data into data consistent with the protocol of the second network.

2. (Previously Presented) The system according to claim 1 in which the second error control module transmits periodic control messages to the first module describing a success or failure of a transmission of data.

3. (Previously Presented) The system according to claim 1 further comprising a data rate converter that allocates available bandwidth for particular communications based upon a weighted-priority assigned each communication.

4. (Previously Presented) The system according to claim 3 in which the data rate converter is adapted to:

- determine the priority of each communication being sent by the data sender over the network;
- assign each communication a selected weight factor depending upon the priority of each communication; and
- initially allocate bandwidth to a particular communication over a selected data link within the network based on at least one factor selected from the group consisting of (a) the bandwidth available on that data link for all communications, (b) the weight factor assigned that particular communication, and (c) the quality of the data link.

5. (Cancelled).

6. (Cancelled).

7. (Cancelled).

8. (Currently Amended) The method of claim ~~5~~ 47 further comprising the steps of:

- identifying each datastream that comprises quality critical data; and
- applying automatic retransmit protocols to each datastream comprising quality critical data.

9. (Currently Amended) The method of claim ~~8~~ 47 further comprising the step of modifying the payload length of packets based upon one of the following: (a) the ~~at least estimated~~ quality of the link over which a particular packet will be transmitted, (b) the quality of service associated with the particular packet, or (c) both of factors (a) and (b).

10. (Currently Amended) The method of claim ~~5~~ 47 further comprising the step of adaptively converting the packets from a first protocol to a ~~generic~~ protocol independent format, ~~after the identification of quality of service levels, in order to facilitate the application of the forward error correction~~ wherein the protocol independent format changes as (a) the quality of service requirements associated with each datastream, (b) the quality of the data link associated with each datastream, or (c) both the quality of service requirement and the quality of the data link associated with each datastream changes.

11. (Currently Amended) The method of claim 10 further comprising the steps of:

- receiving the ~~generically~~ protocol independent ~~formatted~~ datastream following its transmission over a data link; and
- examining the datastream and reconstructing packets from the datastream into a second protocol adapted to ~~the~~ a network to which the data link couples, wherein the first protocol and the second protocol are distinct.

12. (Currently Amended) A transmission error control system for increasing the efficiency of data transmissions within a ~~potentially error-prone~~ network, the system comprising:

- a first protocol converter coupled to an application that provides packetized data in a first protocol, wherein the protocol converter adaptively converts the packetized data from the first protocol into a ~~generic~~ protocol independent format and adaptively modifies a payload length of the data as (a) the selected quality of service level associated with each datastream, (b) an estimated or measured quality of the data link associated with each datastream, or (c) both of factors (a) and (b) changes, and wherein the protocol converter splits the converted data into multiple datastreams that each have a selected, but different, quality of service level; and
- a first error control module, coupled to the protocol converter, that adaptively encodes the data within each of the multiple datastreams by modifying a type of forward error correction applied to the datastream as ~~based on at least:~~ (a) ~~a~~ the selected quality of service level associated with each datastream, (b) an estimated or measured quality of the ~~datalink~~ data link over which ~~the~~ each

datastream will be transmitted, or (c) ~~or~~ both of factors (a) and (b) changes, so that a first datastream is encoded differently than a second datastream when the quality of service level or the quality of the data link associated with the first datastream differs from the quality of service level or the quality of the data link associated with the second datastream.

13. (Cancelled).

14. (Cancelled).

15. (Cancelled).

16. (Cancelled).

17. (Cancelled).

18. (Currently Amended) The system according to claim 12 in which the error control module:

- separates the datastreams into time critical and quality critical datastreams;
- couples to a datalink and forwards time-critical datastreams directly thereto; and
- forwards quality critical datastreams to a retransmission module that monitors transmission of the quality critical datastreams and retransmits said quality critical datastreams based on at least one parameter.

19. (Previously Presented) The system according to claim 18 in which the at least one parameter is independent of any estimate of the round trip time necessary for the transmission to reach its destination and for the error control module thereafter to receive an acknowledgment.

20. (Currently Amended) The system according to claim 12 further comprising a second protocol converter coupled to an application that provides data packetized in a second protocol that is distinct from the first protocol, wherein the second protocol converter:

- converts the packetized data into ~~a generic~~ the protocol independent format; and
- the converted data from the second protocol converter is concatenated with the converted data from the first protocol converter into the multiple datastreams.

21. (Previously Presented) The system according to claim 12 further comprising a data rate converter that allocates available bandwidth for available bit rate transmissions based upon an assigned weighted-priority.

22. (Cancelled).

23. (Currently Amended) A method for dynamically optimizing error control within a network using an asynchronous transfer mode protocol, the method comprising:

- determining whether a selected data transmission includes time critical or quality critical data;
- parsing at least a portion of the quality critical data into automatic retransmit request packet data units ("ARQ-PDUs");

- modifying ~~the~~ a payload length of the ARQ-PDUs based on quality of a data link assigned to carry the selected data transmission in order to improve throughput efficiency; and
- retransmitting, upon satisfaction of a preselected criteria, the quality critical data in order to ensure that said data reaches its destination.

24. (Currently Amended) The method of claim 23 further comprising the step of measuring the quality of ~~a~~ the data link assigned to carry the selected data transmission ~~and wherein the payload length is modified based upon the measured quality of the data link~~.

25. (Previously Presented) The method of claim 24 in which the quality measuring is performed by analyzing either (1) information received from a destination receiver within the ATM network or (2) statistics indicating the error rate of transmitted ARQ-PDUs.

26. (Previously Presented) The method of claim 24 in which the payload length ("L") is calculated as follows: L=48*i-4, wherein i is the sum of the header and trailer for the selected ARQ-PDUs to be transmitted.

27. (Currently Amended) The method of claim 24 further comprising the step of updating ~~the~~ a generation rate of control packets based on the ~~new~~ modified payload length.

28. (Previously Presented) The method of claim 24 further comprising the step of transmitting periodic control messages that describe the success or failure of a particular quality critical data transmission.

29. (Currently Amended) The method of claim ~~24~~ 23 further comprising the step of applying to time critical data forward error correction that varies according to the ~~measured~~ quality of the data link.

30. (Currently Amended) The method of claim 24 further comprising the step of determining the quality of service requirements associated with the selected ~~a particular~~ data transmission.

31. (Currently Amended) The method of claim ~~20~~ 30 further comprising the step of determining the number of attempts to retransmit a particular quality critical data transmission based upon the determined quality of service requirement associated with the selected ~~that particular quality critical~~ data transmission.

32. (Currently Amended) A system deployed in a network having a data sender, a data receiver, and a wireless transmission device, the system comprising:

- a first asynchronous transfer mode adaptation layer that delivers quality critical data from the data sender to a network device;
- a second asynchronous transfer mode adaptation layer that delivers time-critical data from the data sender to a network device; and
- an error control module that modifies the payload length of ~~at least~~ the ~~separated~~ data ~~traffic, the error control module~~ and that ~~encoding~~ encodes the data by applying forward error correction to the data, wherein the modification of the payload length and the encoding of the data are based on quality of service requirements of the data, so that data associated with a first quality of service requirement is encoded differently than data associated with a

second quality of service requirement and ~~outputting~~ outputs the data to the wireless transmission device.

33. (Previously Presented) The system according to claim 32 further comprising a protocol converter module that separates network data traffic by data type.

34. (Previously Presented) The system according to claim 33 in which the data type is the quality of service level for the data ~~traffic~~.

35. (Previously Presented) The system according to claim 32 in which the error control module is adapted to determine whether selected criteria are satisfied and thereafter retransmit quality critical data in order to ensure delivery.

36. (Previously Presented) The system according to claim 35 wherein the first asynchronous transfer mode adaptation layer is coupled to an IP stack providing the time-critical or quality-critical data In the form of an IP packet and further comprises a first sublayer that creates a data unit containing the IP packet.

37. (Currently Amended) The method or system of claim ~~5~~ 47 in which the type of forward error correction scheme is selected from the group consisting of (a) a Reed-Solomon forward error correction scheme; (b) a convolutional forward error correction scheme; (c) a Turbo Product Code error correction scheme; and (d) any combination of the foregoing.

38. (Cancelled).

39. (Cancelled).

40. (Currently Amended) The method or system of claim ~~13~~12 in which the forward error correction ~~scheme~~ type is selected from the group consisting of (a) a Reed-Solomon forward error correction scheme; (b) a convolutional forward error correction scheme; (c) a Turbo Product Code error correction scheme; and (d) any combination of the foregoing.

41. (Currently Amended) The method or system of claim 29 in which the forward error correction ~~scheme~~ type is selected from the group consisting of (a) a Reed-Solomon forward error correction scheme; (b) a convolutional forward error correction scheme; (c) a Turbo Product Code error correction scheme; and (d) any combination of the foregoing.

42. (New) The system according to claim 1, wherein the forward error correction applied by the first error control module is also based on quality of a data link used to transmit the data between the first error control subsystem and the second error control subsystem.

43. (New) The system according to claim 1, wherein the protocol independent format changes as the quality of service requirements change.

44. (New) The system according to claim 1, wherein the conversion by the first protocol converter is also based on quality of a data link used to transmit the data between the first error control subsystem and the second error control subsystem.

45. (New) The system according to claim 1, wherein the first protocol converter modifies a payload length of the data based on the quality of service requirements.

46. (New) The system according to claim 45, wherein the modification of the payload length by the first protocol converter is also based on quality of a data link used to transmit the data between the first error control subsystem and the second error control subsystem.

47. (New) A method for increasing the transmission efficiency of a network, the method comprising:

determining a quality of service requirement for each of a plurality of data packets;

identifying a plurality of datastreams, wherein each datastream includes data packets associated with similar quality of service requirements; and

adaptively applying forward error correction on each of the datastreams, wherein different types of forward error correction are applied to different datastreams based on (a) the quality of service requirements associated with each datastream, (b) a quality of the data link associated with each datastream, or (c) both the quality of service requirement and the quality of the data link associated with each datastream.

48. (New) The system according to claim 12, wherein the first error control subsystem receives periodic control messages from a second error control module describing a successful or unsuccessful data transmission.

49. (New) The system according to claim 48 wherein the first error control subsystem receives data from a second error control module from which to measure or estimate a quality of a data link between the first control module and the second control module.

50. (New) A method for increasing the transmission efficiency of a network, the method comprising:

determining a quality of service requirement for each of a plurality of data packets;

identifying a plurality of datastreams, wherein each datastream includes data packets associated with similar quality of service requirements;

adaptively converting the data packets associated with a selected datastream from a first protocol into a protocol independent format,

adaptively modifying a payload length of the data packets within the selected datastream;

wherein the conversion and the payload modification change as (a) the quality of service requirement associated with the datastream, (b) a quality of a data link associated with the datastream, or (c) both of factors (a) and (b) changes.

51. (New) The method according to claim 50, further comprising:

adaptively applying forward error correction on the selected datastream, wherein different types of forward error correction are applied to different datastreams based on (a) the quality of service requirement associated with the datastream, (b) a quality of a data link associated with the datastream, or (c) both of factors (a) and (b).

52. (New) The system according to claim 12, wherein the first error control module modifies a length of the forward error correction applied to the datastream after modifying the type of forward error correction as (a) the selected quality of service level associated with the datastream, (b) the estimated or measured quality of the data link associated with the datastream, or (c) both of factors (a) and (b) changes.